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A SYNOPSIS OF THE AMERICAN SPECIES OF
ACALYPTA (HEMIP.—TINGITIDAE).

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This paper is based upon material contained in the U. S. National Museum, Calif. Academy of Science and the private collections of J. R. de la Torre-Bueno, Herbert Osborn, H. M. Parshley, G. S. Walley and the writer. The key includes nine species, three of which are described as new. The genus *Drakella* Bergroth is treated as a synonym of *Acalypta*.

Genus ACALYPTA Westwood, 1840.

Acalypta Westwood, *Introd. Mod. Class. Ins.*, II, Synops., 1840, p. 121.

Orthosteira Fieber, *Ent. Mon.*, 1844, p. 46; *Europ. Hemip.*, 1861, pp. 36 and 130.

Acalypta Stål, *Enum. Hemip.*, III, 1873, pp. 118 and 122; *Ofvers. K. Vet.-Akad. Forh.*, 31, No. 3, 1874, p. 51.

Acalypta Horváth, *Ann. Mus. Nat. Hung.*, IV, 1906, pp. 13 and 24.

Acalypta Bueno, *Bul. Brookl. Ent. Soc.*, XIX, 1924, pp. 50 and 93.

Fenestrella Osborn and Drake, *Ohio Biol. Surv.*, II, No. 4, 1917, p. 222.

Drakella Bergroth, *Ann. Soc. Ent. Belg.*, LXII, 1922, p. 152.

Orthotype, Acalypta (Tingis) carinata Panz.

Form ovate to elongate ovate (brachypterous) or oblong (macropterous). Bucculae open or closed in front. Orifice indistinct. Antenniferous tubercles prominent, somewhat cone-shaped, frequently more or less compressed laterally, straight or with the tips more or less strongly curved down-

ward and inward. Antennae moderately long, segment III not much slenderer than IV. Head with two frontal spines, the others wanting. Pronotum unicarinate or tricarinate; hood variable in size, frequently small and somewhat transverse. Paranota slightly reflexed, reticulate. Elytra with distinct costal, subcostal, discoidal and sutural areas; slightly longer than the abdomen in brachypterous form; much longer than the abdomen in macropterous form. Wings almost as long as the elytra in macropterous form; wanting or greatly reduced in brachypterous form.

The genus *Drakella* Bergroth (= *Fenestrella* O. & D.) is treated herein as a synonym of the genus *Acalypta*. The Palearctic species of *Acalypta* having unicarinate pronotum (*A. samara* Put., *A. musci* Schrr., *A. uniseriata* Put., *A. nigrinervis* Stål, *A. brunnea* Germ., and *A. suturalis* Put.) are not generically distinct from *D. ovata* O. & D. and *D. saundersi* Downes. The elytra, head, bucculae, antennae, paranota and rostrum of *Drakella* do not differ in a generic sense from *Acalypta*. The uni- and tri-carinate pronotum are the only constant structural differences between the species belonging to the genera *Drakella* (unicarinate pronotum) and *Acalypta* (tricarinate pronotum). This synonymy agrees with Horváth's classification of the European species of *Acalypta* in "Synopsis Tingitidarum Regionis Palaearticae," IV, 1906, p. 24. It should also be noted that the lateral carinae are not very well developed in some specimens of *A. thomsoni* Stål.

KEY TO THE AMERICAN SPECIES OF ACALPTA.

1. Pronotum unicarinate, the lateral carina wanting 2
 Pronotum tricarinate 3
2. Third segment of antennae twice as long as the fourth; elytra as in fig. 1, *a* *D. ovata* O. & D.
 Antennae longer, third segment more than twice as long as IV, elytra different, see fig. 1, *b* *D. saundersi* Downes.
3. Antenniferous tubercles cone-like, not curved, directed distinctly outward and slightly downward.. *A. cooleyi* Drake.
 Antenniferous tubercles with their tips strongly curved downward and inward 4
4. Antero-lateral margins of the paranota not angulate, the two margins jointly rounded 5
 Antero-lateral margins of the paranota angulate or sub-angulate, the two margins quite distinct 7
5. Anterior margin of pronotum (hood) scarcely produced; paranota very narrow, biseriata in front, uniseriate behind, the areolae extremely small and nearly round; lateral carinae

not strongly raised, rather indistinctly areolate, discoidal area with six rows of areolate at its widest part.

A. nyctalis n. sp.

Hood distinctly produced in front; lateral carinae strongly foliaceous, the areolae large; discoidal area long, with four rows of areolae 6

6. Hood somewhat Δ -shaped, projecting over base of head; discoidal area long and narrow *A. lillianis* Bueno.

Hood more roundly and slightly less produced in front; discoidal area a little more acuminate posteriorly, the carinae slightly less elevated; areolae slightly smaller; antennae slightly shorter *A. modesta* Parshley.

7. Median carina strongly raised anteriorly, hood projecting angularly (distinctly Δ -shaped) in front; lateral carinae low, without areolae, divaricating posteriorly; discoidal area scarcely impressed *A. thomsoni* Stål.

Hood transverse, sub-angularly produced in front; lateral carinae strongly foliaceous, subparallel, the areolae distinct 8

8. Antennae moderately long (seg. III = 35; IV = 17); discoidal and subcostal areas each with six (sometimes six to seven) rows of areolae, costal area irregularly biseriate on the distal portion **A. vanduzeei** n. sp.

Antennae slender and much shorter (seg. III = 25; IV = 12); more closely reticulated; costal area uniseriate, except at base; discoidal and subcostal area with four (sometimes here and there five) rows of areolae. **A. vandykei** n. sp.

Acalypta ovata (Osborn & Drake) (fig. 1, a).

Fenestrella ovata Osborn and Drake, Ohio Biol. Surv., II, No. 4, 1917, p. 223, fig. 2.

Drakella ovata Bergroth, Ann. Soc. Ent. Belg., LXII, 1922, p. 152.

Ovate, dark grayish brown. Head with two rather short, porrect, blunt, converging spines. Antenniferous tubercles prominent, their tips strongly curved downward and inward. Rostral channel slightly widening posteriorly, the rostrum reaching on the first segment of the venter. The outer nerve between subcostal and discoidal areas strongly raised and prominent. Length, 2 mm.; width, 1.35 mm.

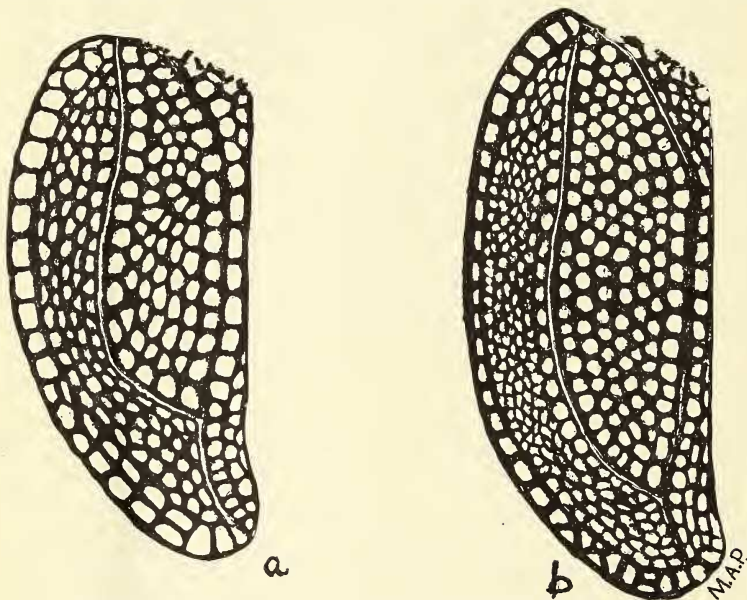
Holotype, brachypterous female, Cincinnati, Ohio, collected by Chas. Dury, in collection of Herbert Osborn. Known from the type and two other short winged females from the type locality, all taken by Mr. Dury while sifting moss and debris for beetles. The male and the macropterous form are unknown.

Acalypta saundersi (Downes) (fig. 1, b).

Drakella saundersi Downes, Can. Ent., IX, No. 3, 1927, p. 60.

This very distinct species may be separated from *A. ovata* (O. & D.) by the characters listed in the key and fig. 1. Reticulations more regular, smooth and polished in *ovata*. Frontal spines about as much turned down as up in *D. ovata*. Length, 2.2 mm.; width, 1.35 mm.

Known only from the *holotype*, a macropterous female, Goldstream, B. C., July 15, 1926, found among detritus washed up on the edge of a reservoir in a low marshy area by L. G. Saunders, in Canadian National collection, Ottawa, Canada. Nothing is known regarding its food or habits.



1. Left elytron of (a) *Acalypta ovata* O. & D., and
(b) *A. saundersi* Downes.

Acalypta thomsoni Stål (fig. 2).

Acalypta thomsonii Stål, Enum. Hemip., III, 1873, p. 122.

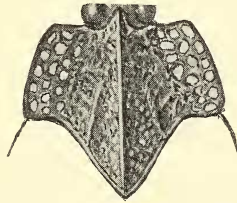
Acalypta thomsoni Drake, Ann. Carn. Mus., XVI, No. 3-4,
1926, p. 377, Pl. XXXIV, fig. d.

Acalypta madelinæ Bueno, Bul. Brook. Ent. Soc., XXI, No. 3,
1926, p. 117.

Smooth, rather shiny, brownish to dark grayish brown. Bucculae almost or contiguous in front. Segment III of an-

tennae a little more than twice as long as IV, the latter black. Antenniferous tubercles large, somewhat compressed laterally, curved as in *A. lillianis* Bueno. Paranota broad, rectilinear, slightly variable in width. Lateral carinae low, distinctly diverging posteriorly, slightly less elevated in some specimens than in others. Median carina strongly raised anteriorly, forming a distinctly Δ -shaped hood in front. Discoidal area scarcely impressed, with five to six rows of areolae at its widest part. Costal area broad, biseriate at the base, uniseriate in front of the middle and then bi- to triseriate behind; subcostal area broader, composed of six rows of areolae.

Types, ♂ & ♀, "*Carolina meridionalis*" in Naturhistoriska Riksmuseet, Stockholm, Sweden. Specimens have been examined from Massachusetts, Virginia and Washington, D. C. Taken in sphagnum and moss at Dunnan, Va., September 28, 1925, by H. G. Barber. Hibernates as adults in moss. A detailed drawing of the pronotum of the type (Fig. 1) by Madame Thérèse Eklom, of Stockholm shows that *A. thomsoni* has been correctly determined by various American workers. *A. madelinae* Bueno is a synonym. The macropterous form is unknown.



2. Pronotum of *Acalypta thomsoni* Stål (type).

Acalypta nyctalis n. sp.

Ovate, yellowish brown. Head short, black; frontal spines short, divergent, slightly shorter than in *A. lillianis* Bueno. Antenniferous tubercles large, curved as in *A. lillianis*. Buculae not contiguous in front. Rostrum long, reaching to the base of the abdomen. Antennae stout, segment I a little shorter than in *A. thomsoni*, the apical segment black. Pronotum coarsely pitted, tri-carinate; lateral carinae faintly diverging posteriorly, each slightly raised anteriorly, the areolae becoming distinct in front; median carina more prominent, slightly more raised anteriorly, the areolae becoming dis-

tinct and larger anteriorly. Paranota narrow, slightly reflexed, rounded, uniseriate behind, biseriate in front, the areolae small. Hood transverse, its anterior margin a little straighter than in *lillianis*.

Elytra convex, rounded behind; costal area narrow, almost entirely uniseriate (the distal third with three or four extra cells); subcostal area broad, with five to six rows of areolae at its widest part; areolae of subcostal, discoidal and sutural areas equal in size, but slightly smaller than those of costal area. Legs and antennae dark brown. Length, 2.6 mm.; width, 1.2 mm.

Holotype, brachypterous, female, Franconia, New Hampshire, in U. S. National Museum collection. This species has heretofore been confused with *A. lillianis* Bueno. The much narrower paranota and the character of the hood, carinae and elytra are very different from *lillianis* or allied forms.

Since writing the foregoing description, a short winged female (*paratype*) from Bilby Alta, Alberta, Canada, June 1, 1924, collected by O. Bryant, has been received. The apex of the third and the fourth antennal segments are black, IV being not quite half as long as III.

Acalypta lillianis Bueno.

Acalypta lillianis Bueno, Bul. Brook. Ent. Soc., XI, No. 2, 1916, p. 39.

Acalypta lillianis Osborn and Drake, Ohio Biol. Surv., II, No. 4, Bul. 8, 1916, p. 221, figs. 1 and 2.

Acalypta ovata Osborn and Drake, Ohio Jour. Sci., XVII, No. 1, 1916, p. 9, fig. 1 (described macropterous form of *A. lillianis* Bueno).

Acalypta grisea Heidemann, Proc. Ent. Soc. Wash., XVIII, 1917, p. 217.

Dark grayish brown to black. Antennae moderately slender, segment III three to slightly more than three times as long as IV. Bucculae open in front. Hood small, somewhat transverse, projecting sub-angulately in front. Carinae strongly foliaceous, uniseriate, the lateral ones almost parallel. Paranota rounded, biseriate, sometimes partly triseriate in front. Discoidal area long, with four rows of areolae at its widest part, a little more rounded behind than in *A. modesta* Parsh.

Brachypterous form: Length, 2.3 mm.; width, 1.2 mm.

Macropterous form: Length, 3.0 mm.; width, 1.6 mm.

Holotype (macropterous female) and *allotype* (macropterous male), White Plains, N. Y., in the collection of J. R. de la Torre-

Bueno. Morphotypes, brachypterous male and female, in the collection of Bueno. Specimens have been examined from Iowa, Illinois, Indiana, Ohio, Michigan, Pennsylvania, New Hampshire, Maine, Massachusetts, New Jersey, Washington, D. C., North Carolina, Maryland, and Ottawa and Quebec, Canada. Bueno also reports the insect from North Carolina. It has been taken in moss at White Plains, N. Y., by Bueno; the Adirondacks Mountains, N. Y., by Barber; Covey Hill, Quebec, by G. S. Walley, and at Ames, Iowa, by G. O. Hendrickson. H. G. Barber collected a long series of species under a board at Lakehurst, New Jersey. Hendrickson and Drake found nymphs and adults in low wet mossy areas in the virgin prairies near Ames, Iowa; one short-winged adult was black in color. Bueno collected numerous specimens "in a damp and marshy meadow by sweeping close to the ground where the tall tree-like moss grows in clumps." He also found nearly full-grown nymphs during November, December, March and April. Hibernating adults have been taken in Iowa in early April by Hendrickson.

The brachypterous form of *A. lillianis* shows a considerable variation in color, size and shape. The antennae also show a slight variation in length. These variations make it rather difficult to separate it from *A. modesta* Parshley.

Acalypta modesta Parshley.

Acalypta modesta Parshley, Proc. Brit. Col. Ent. Soc., No. 18, (Syst. Ser.), 1921, p. 4.

Acalypta modesta Downes, Proc. Ent. Soc. B. C., No. 23, 1927, p. 10.

Pale grayish brown, the legs and antennae darker. Paraclype slightly narrower than *A. lillianis* Bueno; hood not so roundly and slightly less produced in front; carinae slightly less elevated; and the costal area a little narrower. The third segment of the antennae is also slightly shorter than in most of the specimens of *lillianis*. Discoidal area more acuminate posteriorly. The macropterous form is unknown.

Holotype, macropterous female, Royal Oak, B. C., May 14, 1917, collected under moss on rocks by R. C. Treherne, in the National collection, Ottawa, Canada. *Allotype*, macropterous male, taken with holotype, in collection of H. M. Parshley. Mr. G. S. Walley, of the Dept. of Agriculture of Canada, states that holotype is a very poor specimen, having the pronotum and hood injured and the left elytron missing. The allotype is in perfect

condition, but it appears to be slightly teneral; this may account to some extent for its lighter color. The differences between *lillianis* and *modesta* are not marked and are quite comparative, thus making them very difficult to separate in the key.

Acalypta vanduzeei n. sp.

Ovate, brown, the paranota, hood, triangular process slightly tinged with yellowish; two frontal spines rather long, porrect, slightly divaricating, brown. Bucculae not contiguous in front. Eyes dark reddish brown. Antenniferous tubercles directed obliquely downward and curved inwardly towards the tips as in *A. lillianis* Bueno. Antennae brown, moderately long and stout, clothed with numerous fine short hairs; segment I short, very stout; II very short, obconical; III slightly curved, narrowed towards the apex; IV brownish black, fusiform, the hairs longer, nearly two and a half times as long as III. Rostral canal narrow, deep, the laminae testaceous; rostrum reaching a little beyond the sternum. Legs dark brown, the tibiae a little lighter. Abdomen beneath brownish black, sometimes tinged with reddish.

Pronotum tricarinate, each carina areolate and raised anteriorly, the lateral carinae parallel. Hood a little larger and more strongly produced in front than in *A. lillianis*. Paranota irregularly triseriate, rounded on the sides, the anterior margins subtruncate. Elytra a little longer than the abdomen; costal area widely reticulated biseriate at the base and along the greater portion of the distal half; costal area very broad, with five to six rows of areolae, strongly and evenly raised towards the subcostal area; subcostal area broad, with six rows of areolae at its widest part, separated from subcostal area by a sinuate and distinctly raised nervure; the areolae of subcostal, discoidal and sutural areas about equal in size. Length, 2.1 mm.; width, 1.21 mm.

Holotype, male, Green Point Ranch, Humboldt County, Calif., June 11, 1916, F. E. Blaisdell, collector, in Calif. Academy of Science. *Allotype*, taken with holotype, in Drake collection. The paranota, hood and subcostal and discoidal areas separate this species from *A. lillianis* Bueno. The long winged form is unknown. The female is a little broader and stouter than the male.

Acalypta vandykei n. sp.

Elongate ovate, brownish. Head short, black; frontal spines moderately long, stout, blunt, porrect, brownish; the other spines wanting. Antennae slenderer than in *A. vanduzeei*; segment II short, obconical, not half as long as I;

III brown, slightly curved, slender, becoming slender towards the apex, a little more than twice as long as IV; IV black, fusiform, clothed with moderately long hairs. Antenniferous tubercles strongly curved as in *A. lillianis* Bueno. Bucculae open in front. Apex of rostrum extending a little beyond the rostral channel. Orifice absent.

Paranota narrower than in *A. vanduzeei*, the anterior margin straight; the outer margin slightly curved, triseriate in front and biseriate behind. Hood similar in form to *vanduzeei*, but slightly more elevated. Carinae more raised than in *vanduzeei*. Elytra narrower in the male than in the female; costal area narrow, uniseriate; subcostal area broad, composed of four somewhat irregular rows of areolae; discoidal area bounded by a very prominent costate nervure, widest a little behind the middle, composed of four to five rows of areolae. Long winged form unknown. Length, 1.82 mm.; width, 1 to 1.15 mm.

Holotype (male), San Francisco County, Calif., December 2, 1906, Van Dyke collector, in Calif. Academy of Science. *Allotype* (female), taken with holotype in Drake collection. The female is broader and more ovate than the male. The shape of the paranota and the more triangularly produced anterior margin of the hood separate either *A. vandykei* or *A. vanduzeei* from *A. lillianis* Bueno.

Acalypta cooleyi Drake.

Acalypta cooleyi Drake, Ohio Jour, Sci., XVII, No. 6, 1917, p. 213.

Elongate oblong, dark grayish brown. Pronotum coarsely punctate, strongly swollen through the disc. Carinae parallel, foliaceous, each composed of a single row of rather large areolae. Hood roof-shaped, projecting (Δ -shaped) angulately in front. Paranota biseriate, the outer margin nearly straight, angulate in front and sub-angulate back of the middle. Antenniferous tubercles large, prominent, straight, cone-shaped, distinctly divaricating towards their tip, also inclined slightly downward. Bucculae open in front. Discoidal area impressed, bounded by a prominent costate nervure; wings longer than the abdomen. Length, 2.9 mm.; width, 1.2 mm.

Known only from the *holotype*, macropterous female, Bozeman, Montana, June 13, 1913, Prof. R. A. Cooley collector, in Drake collection. The antenniferous tubercles separate this species from its congeners.